NASCO	**North American Commission** *North American Commission Annual Report (Tabled by Canada)*	**NAC(23)05rev**[1] **Agenda item: 7**

North American Commission Annual Report (Tabled by Canada)

Submitted by: Fisheries and Oceans Canada (DFO)
Date: Data cover calendar year 2022

1. Summary of salmonid controlled disease incidents

The Canadian Food Inspection Agency (CFIA) is responsible for Canada's National Aquatic Animal Health Program and is the Competent Authority for aquatic animal health which includes meeting Canada's international reporting obligations to the World Organization of Animal Health (OIE) under the World Trade Organization (WTO) Sanitary and Phytosanitary (SPS) Agreement.

The CFIA updates the health status of Canada's aquatic animals monthly as mandatory notifications of aquatic animal diseases are confirmed (See Annex).

For more information, please consult the CFIA website or contact:

- Disease Status in Canada: Dr. Martin Appelt, Senior Director, Animal Health Directorate, Animal Health Programs Division, Programs and Policy Branch, CFIA. Martin.Appelt@inspection.gc.ca
- International Trade: Dr. Nancy Rheault, Director, Animal Import/Export Division, International Affairs Branch, CFIA. Nancy.Rheault@inspection.gc.ca

2022 summary of federally reportable diseases of salmonids

https://www.inspection.gc.ca/animal-health/aquatic-animals/diseases/reportable-diseases/federally-reportable-aquatic-animal-diseases/eng/1339174937153

Current as of: 2022-12-31

Disease	**Total (Atlantic Region)**
Ceratomyxosis (*Ceratomyxa shasta*)	0
Infectious haematopoietic necrosis	0
Infectious pancreatic necrosis	1
Infectious salmon anaemia	15
Viral haemorrhagic septicaemia	0
Whirling disease (*Myxobolus cerebralis*)	0

Confirmed cases of federally reportable diseases in 2022 that affected salmonids[2] in the Atlantic Region are summarized in the tables below.

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[1] Following a request from Canada on 26 May 2023 an addendum has been added to this document.
[2] Reporting does not distinguish whether the salmonids were cultured or wild.

Locations infected with infectious pancreatic necrosis[3]:

Date confirmed	Location	Animal type infected	Scientific Name
November 21	Newfoundland	Rainbow trout	*Oncorhynchus mykiss*

Locations infected with infectious salmon anaemia[4]:

Date confirmed	Location	Animal type infected	Scientific Name
December 21	New Brunswick	Atlantic salmon	*Salmo salar*
December 20 Table note*	New Brunswick	Atlantic salmon	*Salmo salar*
December 15 Table note*	New Brunswick	Atlantic salmon	*Salmo salar*
December 15 Table note*	New Brunswick	Atlantic salmon	*Salmo salar*
December 8 Table note*	Prince Edward Island	Atlantic salmon	*Salmo salar*
November 10	New Brunswick	Atlantic salmon	*Salmo salar*
September 16	Newfoundland	Atlantic salmon	*Salmo salar*
September 12 Table note*	New Brunswick	Atlantic salmon	*Salmo salar*
August 4 Table note*	New Brunswick	Atlantic salmon	*Salmo salar*
August 2 Table note*	Nova Scotia	Atlantic salmon	*Salmo salar*
July 28	New Brunswick	Atlantic salmon	*Salmo salar*
May 24	Newfoundland	Atlantic salmon	*Salmo salar*
March 16	Newfoundland	Atlantic salmon	*Salmo salar*
February 24	Newfoundland	Atlantic salmon	*Salmo salar*
January 19	New Brunswick	Atlantic salmon	*Salmo salar*

*Table Note * This virus strain is not known to cause disease.*

2. Summary of breaches of containment of salmonids from net cages

There are no marine net-pens in Quebec or Prince Edward Island.

There was one escape event in New Brunswick[5] in 2022 with approximately 100 smolt salmon escaped from a site in Back Bay area.

In Newfoundland and Labrador[6], a suspect escape was reported on April 7, 2022, due to a tear found in one net that held steelhead trout. No escaped fish were observed or reported outside the cage and based on both feeding response and inspection by a diver, the number of fish

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[3] https://inspection.canada.ca/animal-health/aquatic-animals/diseases/reportable-diseases/infectious-pancreatic-necrosis/locations-infected/eng/1549521244435/1549521244700

[4] https://inspection.canada.ca/animal-health/aquatic-animals/diseases/reportable-diseases/isa/locations-infected/eng/1549521878704/1549521878969

[5] In New Brunswick, reporting and management plan requirements for escapes are specified under Section 14.1 of the *NB Regulation 91-158: General Regulation* under the provincial *Aquaculture Act*.

[6] In Newfoundland and Labrador, escape reporting in managed by the Code of Containment for the Culture of Salmonids, which is a condition of all salmonid aquaculture site licences in the Province, but is co-administered by the Province and DFO. The code requires licensees to immediately report escape incidents to both DFO and the provincial Department of Fisheries, Forestry and Aquaculture (FFA). The Province also requires public reporting as per AP 17 of the FFA Aquaculture Policy and Procedures Manual (via the NAIA website or company website) within 24 hours of escapes, incident events and disease events.

remaining appeared unchanged. On May 28, 2022, one Atlantic salmon was observed and recovered outside of a net pen. The salmon accidentally entered the waters outside the net pen due to human error during a fish handling event. Recapture efforts were initiated by the company under the direction of DFO and the fish was retrieved.

In Nova Scotia[7], there was one confirmed escape event in 2022 of eleven Atlantic salmon during smolt transfer to a marine site. Eight of the eleven fish were retrieved, leaving three fish as confirmed escapes. There were no confirmed escapes of rainbow trout. The Nova Scotia Department of Fisheries and Aquaculture (DFA) will complete an inventory reconciliation for 2022. Should there be inventory variances that cannot be explained, DFA will report, as required. In 2021, there was one reported escape event of rainbow trout for which the estimated escape numbers could not be provided until the completion of harvesting in 2022. Inventory reconciliation has been completed and an estimated 79,712 rainbow trout were unaccounted for at the time of harvest, which represented 24% of the total site inventory.

3. Summary of Salmonid introductions from outside the Commission Area

Species (strain, if applicable)	**Number**	**Life Stage**	**Origin**[1]	**Destination**[2]	**Purpose**[3]	**Land-Based or Marine**
Arctic Char (*Salvenius alpinus*)	35,000	Eggs	Yukon	Québec	Aquaculture	Land-Based
Arctic Char (*Salvenius alpinus*)	70,000	Eggs	Yukon	Québec	Aquaculture	Land-Based
Atlantic Salmon (*Salmo salar*), Saga Strain	60,000	Eggs	Hafnarfjordur, Iceland	Centre Burlington, NS	Culture	Land-Based
Atlantic Salmon (*Salmo salar*), Saga Strain	60,000	Eggs	Hafnarfjordur, Iceland	Centre Burlington, NS	Culture	Land-Based
Atlantic Salmon (*Salmo salar*), Saga Strain	60,000	Eggs	Hafnarfjordur, Iceland	Centre Burlington, NS	Culture	Land-Based
Atlantic Salmon (*Salmo salar*), Saga Strain	60,000	Eggs	Hafnarfjordur, Iceland	Centre Burlington, NS	Culture	Land-Based
Atlantic Salmon (*Salmo salar*), Saga Strain	60,000	Eggs	Hafnarfjordur, Iceland	Centre Burlington, NS	Culture	Land-Based
Atlantic Salmon (*Salmo salar*), Saga Strain	60,000	Eggs	Hafnarfjordur, Iceland	Centre Burlington, NS	Culture	Land-Based
Atlantic Salmon (*Salmo salar*), Saga Strain	60,000	Eggs	Hafnarfjordur, Iceland	Centre Burlington, NS	Culture	Land-Based
Atlantic Salmon (*Salmo salar)*	5,200,000	Eggs	Iceland	Marystown, NL	Aquaculture	Land-based

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[7] In Nova Scotia, as part of the 2015 *Aquaculture Management Regulations*, the Province requires a containment management section within annual farm management plans (FMPs), which includes details on the operator's response to a containment breach.

Atlantic Salmon *(Salmo salar)*, StofnFisker strain	105,000	Eyed egg	Iceland	Victoria, PE	Research	Land-Based
Atlantic Salmon *(Salmo salar)*, StofnFisker strain	1,000	Fry	Scotland	Souris, PE	Research	Land-Based
Rainbow Trout *(Oncorhynchus mykiss)*	1,050,000	Eyed egg	Washington state, US	Brookvale, PE	Aquaculture	Land-Based
Rainbow Trout *(Oncorhynchus mykiss)*	1,700,000	Eyed egg	Washington state, US	Brookvale, PE	Aquaculture	Land-Based
Rainbow Trout *(Oncorhynchus mykiss)*	100,000	Eyed egg	Washington state, US	Souris, PE	Research	Land-Based
Rainbow Trout *(Oncorhynchus mykiss)*	100,000	Eggs	Washington State, USA	St. Andrews, NS	Enhancement/Stocking	Land-Based
Rainbow Trout *(Oncorhynchus mykiss)*, Donaldson Strain	150,000	Eggs	Washington State, USA	Millbrook, NS	Culture	Land-Based
Rainbow Trout *(Oncorhynchus mykiss)*, Riverence Strain	32,000	Eggs	Washington State, USA	Centrelea, NS	Culture	Land-Based
Rainbow Trout *(Oncorhynchus mykiss)*, Steelhead Strain	300,000	Eggs	Washington State, USA	Millbrook, NS	Culture	Land-Based
Rainbow Trout *(Oncorhynchus mykiss)*, Steelhead Strain	600,000	Eggs	Washington State, USA	Wolfville, NS	Culture	Land-Based
Rainbow Trout *(Oncorhynchus mykiss)*, Steelhead Strain	150,000	Eggs	Washington State, USA	Wolfville, NS	Culture	Land-Based
Rainbow Trout *(Oncorhynchus mykiss)*, Steelhead Strain	600,000	Eggs	Washington State, USA	Wofville, NS	Culture	Land-Based
Rainbow Trout *(Oncorhynchus mykiss)*, Steelhead Strain	30,000	Eggs	Washington State, USA	Centrelea, NS	Culture	Land-Based
Rainbow Trout *(Oncorhynchus mykiss)*, Steelhead Strain	40,000	Eggs	Washington State, USA	Centrelea, NS	Culture	Land-Based

Notes:

1. This would be the province or state for introductions from the west coast; or country for international introductions. It was decided that introductions between Canada and the US that are within the NASCO Commission Area (between Maine and New Brunswick, for example) would not be included here as those introductions would be captured in other avenues (ICES WGITMO, for example) and because these are not as relevant.
2. The more specific the information the better, however, Bay level is considered sufficient.
3. This refers to the intention for the introduction – aquaculture, research, stock enhancement, etc.
4. **Summary of Transgenic activities within the Country [Annex 1 of NAC (10)6]**

In 2022, there were no known violations of the *Canadian Environmental Protection Act* in respect of transgenic Atlantic salmon.

In 2022, there was no production of transgenic fish in Nova Scotia, New Brunswick or Newfoundland and Labrador.

Members of the Canadian Aquaculture Industry Alliance (CAIA), which represents the majority of farmed salmon facilities in Canada, do not farm or sell transgenic (genetically modified) salmon, and are not growing or researching transgenic salmon. Outside of CAIA's membership, there are two commercial facilities owned by an American firm in Canada that produce transgenic salmon: one in Fortune, Prince Edward Island and the second Rollo Bay, Prince Edward Island. Both are land-based facilities.

In keeping with Annex 5, paragraph d) of the Williamsburg Resolution, DFO has established the Centre of Expertise on Aquatic Biotechnology Regulatory Research, where contained, land-based research is undertaken to provide scientific knowledge that informs the risk assessment, risk management and regulatory approaches for transgenic salmonids.

To facilitate decision-making in the absence of full scientific certainty, where there is a risk of serious or irreversible harm, the Government of Canada has developed a Framework for the Application of Precaution in Science-Based Decision Making about Risk. This approach is aligned with Article 7 of the Williamsburg Resolution.

Although the following project is unrelated to transgenic activity, Canada has agreed to provide introductions and transfers information regarding Newfoundland and Labrador's Grieg Project in future North American Commission reports, as available. Grieg has been licensed to operate 13 marine-based farms in Placentia Bay, Newfoundland. Each marine-based farm consists of multiple cages with nets extending down to 43 meters. The project proposal was received in February 2016 and has undergone a series of provincial and federal reviews and assessments. More information on the timeline and other relevant documents are publicly available from the Province of Newfoundland and Labrador at https://www.gov.nl.ca/mae/projects/project-1834/. Additionally, DFO has published two reviews of Grieg's proposed sites, and can be found at the following links: https://www.dfo-mpo.gc.ca/csas-sccs/Publications/ScR-RS/2019/2019_029-eng.html and https://www.dfo-mpo.gc.ca/csas-sccs/Publications/ScR-RS/2022/2022_044-eng.html. Grieg introduced their first batches of triploid (all female) European salmon eggs at their land-based hatchery in Marystown in 2020. After a suspected detection of Infectious Salmon Anaemia (ISA) virus in 2021, they culled the hatchery population. In 2022, they stocked two marine sites in Placentia Bay, Newfoundland. Prior to DFO's approval to transfer smolt to marine cages, the company is required to sample fish (via blood) to verify triploidy beyond the two-step validation done at the source in Iceland. The development of a triploid verification methodology was a condition of release from their provincial environmental assessment, and was approved by both the provincial and federal governments.

Annex 1

Additional Information

- Information on all confirmed findings of regulated diseases is publicly available on the CFIA's website (see http://www.inspection.gc.ca/animals/aquatic-animals/diseases/reportable/2017/eng/1339174937153/1339175227861).
- The CFIA also maintains information on the status of controlled diseases in Canada (see http://www.inspection.gc.ca/animals/aquatic-animals/eng/1299155892122/1320536294234

Addendum

Compilation of confirmed Atlantic salmon escapees caught at monitoring facilities in Eastern Canada

- At the 2022 NASCO Annual Meeting, a request was made for Canada to provide information on confirmed salmon escapees captured at monitoring facilities. Canada committed to providing available information.
- An email request was sent by DFO Science to biologists responsible for monitoring programs in Eastern Canada asking them for data on salmon escapees by river, province and year for the time period of 2015 to 2022. Biologists at the Atlantic Salmon Federation, Ministère de l'Environnement, de la Lutte contre les changements climatiques, de la Faune et des Parcs (MELCCFP; Quebec) and DFO (Newfoundland and Labrador, Gulf and Maritimes Regions) were contacted.
- A response was received by all individuals contacted.
- Contacted individuals were also asked to forward the data request to people who may be able to contribute data. Additional data was provided in the Newfoundland and Labrador Region.
- Figure 1 shows the location of 49 rivers for which information on presence/absence of salmon escapees was compiled. Other rivers with angling activities that could result in the observation of salmon escapees, but without any such mention, are not represented on this map. Anglers catching ''strange'' salmon are usually contacting the MELCCFP (Qc) and DFO (other provinces), even though the fish are usually other salmonid species or sick Atlantic salmon.

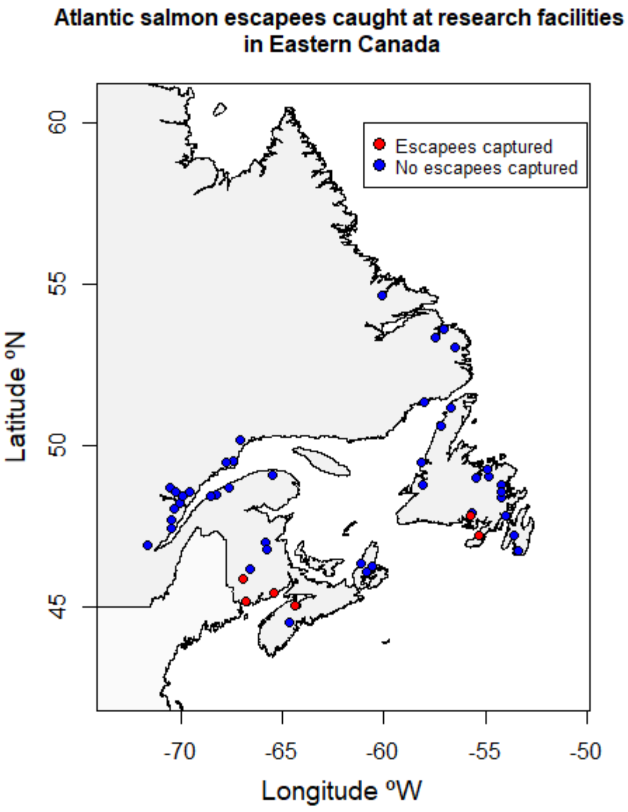

Figure 1. *Monitoring facilities in Eastern Canada in operation during 2022 with captures of Atlantic salmon escapees. Note: no captures at facilities does not indicate no upstream migration of salmon escapees.*

- There were no reports of salmon escapees in the province of Quebec and none were caught at monitoring facilities in DFO Gulf Region.
- Salmon escapees were caught in DFO Maritimes and Newfoundland/Labrador Regions. Escapees were confirmed by external examination and scale analysis.

- Table 1 provides a breakdown of confirmed salmon escapees caught by river from 2015 to 2022. A total of 155 and 41 salmon escapees were caught in DFO Maritimes and Newfoundland/Labrador Regions from 2015 to 2022, respectively.
- In DFO Maritimes Region, four rivers had confirmed salmon escapees. The Magaguadavic River had the most escapees caught at a monitoring facility.
- In DFO Newfoundland/Labrador Region, two rivers, Garnish and Little rivers, had confirmed salmon escapees.
- No other reports were received.
- The absence of salmon escapees captured at monitoring facilities does not mean that no escapees migrated upriver but rather, that none were caught at the facilities.

Table 1. *Confirmed salmon escapees caught at monitoring facilities in rivers of DFO Maritimes and Newfoundland/Labrador Regions from 2015 to 2022. Escapees were confirmed by external examination and scale analysis. No salmon escapees were caught in the province of Quebec and DFO Gulf Region.*

Year	Maritimes Region				Newfoundland Region		
	Big Salmon River	Gaspereau River (White Rock)	Magaguadavic River	Saint John River (Mactaquac Dam)	Garnish River	Little River	**Total**
2015	0	0	0	0	8	6	**14**
2016	0	0	0	0	3	3	**6**
2017	0	1	0	0	7	1	**9**
2018	0	1	0	1	5	4	**11**
2019	3	0	78	3	0	2	**86**
2020	0	0	0	0	1		**1**
2021	0	2	3	0	1		**6**
2022	0	0	59	4	0		**63**
Total	**3**	**4**	**140**	**8**	**25**	**16**	**196**